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1. A common rail injector for injecting fuel in a common rail injection system of an internal combustion engine, having an injector housing (1), which communicates with a central high-pressure reservoir and in which a nozzle needle is axially displaceable in order to adjust the injection as a function of the pressure in a control chamber, and having a sealing element (6), which is disposed in an annular chamber (3) that is provided between a valve element (2) and the injector housing (1), characterized in that in addition to the sealing element (6), a support device (7) is disposed in the annular chamber (3) between the valve element (2) and the injector housing (1).

2. The common rail injector of claim 1, characterized in that the support device is formed by an annular support disk (7), in particular comprising a metal material.

3. The common rail injector of claim 2, characterized in that the support disk (7) is embodied as slightly conical on its inner circumference.

4. The common rail injector of claim 3, characterized in that the slightly conically embodied inner circumference of the support disk (7) narrows toward the sealing element (6) or away from the sealing element (6).

5. The common rail injector of claim 2, characterized in that the support disk (7) is embodied slightly conically on its inner and outer circumference.

6. The common rail injector of one of the foregoing claims, characterized in that leakage grooves (8, 9, 10, 11) are embodied in the support device (7).

7. The common rail injector of claim 6, characterized in that the leakage grooves (8, 9, 10, 11) are provided on the side of the support device (7) remote from the sealing element (6).